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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/706,840	11/11/2003	Charles E. Baumgartner	124331	6920

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EXAMINER	
HARAN, JOHN T	
ART UNIT	PAPER NUMBER

1733

DATE MAILED: 03/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/706,840

Applicant(s)

BAUMGARTNER ET AL.

Examiner

John T. Haran

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 February 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) 23-28 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-18 is/are allowed.
- 6) ☒ Claim(s) 19-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 11/11/03.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election of Group II, claims 1-22 in the reply filed on 2/15/05 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Information Disclosure Statement

2. The information disclosure statement (IDS) submitted on 11/11/03 has been considered by the examiner.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 19-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Busse et al (U.S. Patent 5,359,760) in view of Gururaja (U.S. Patent 6,868,594).

Busse et al is directed to a method for making a piezoelectric transducer wherein ceramic PZT plates are stacked with interposed layers of thermoplastic polymer and the layers are laminated under heat and pressure forming a laminate block. After lamination the laminate block is diced perpendicular to the plane of the layers and rotated to have slabs of alternating perpendicular layers of ceramic PZT and polymer. Then electrode layers are formed on the top and bottom surfaces of the slabs thereby

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forming the transducer assembly (See Figure 1; Column 5, line 58 to Column 6, line 68). Busse et al is silent towards forming layers of metal on the surfaces of both sides of the ceramic PZT plates and then laminating the plates together with the polymer layers such that the metallized surfaces of adjacent ceramic plates confront each other.

Gururaja is also directed to a method of making a transducer formed from a stack of alternating ceramic plates that are metallized on both surfaces and polymer such that slabs of alternating perpendicular layers of metallized ceramic plates and polymer layers are formed wherein the adjacent metallized surfaces confront each other (See Figure 9; Column 7, lines 23-53). Gururaja teaches that in the prior art transducer where made from assemblies similar to Busse et al of slabs of alternating perpendicular layers of ceramic plates and polymer layers (Figure 3B) and that using metallized ceramic plates is an improvement (Column 2, lines 36-60). One skilled in the art would have readily appreciated metallizing both surfaces of the ceramic plates in the method of Busse et al for the reasons cited in Gururaja et al. It would have been obvious to one of ordinary skill in the art at the time the invention was made to metallize both surfaces of the ceramic plates prior to stacking them with the interposed polymer layers in the method of Busse et al as suggested in Gururaja.

Regarding claim 20, Busse et al teaches applying the electrodes to the faces of the slabs via a flex circuit element (dielectric material) (Column 6, lines 57-68) and Gururaja teaches connecting the electrodes on one face to odd-numbered electrodes and the electrodes on the other face to even-numbered electrodes (Figure 9; Column 7, lines 42-53). One skilled in the art would have readily appreciated applying metallized

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flex circuit elements to both faces of the slabs in order to isolate the odd-numbered electrodes from the even-numbered electrodes and it would have been obvious to do such in the method of Busse et al, as modified above.

Regarding claims 21 and 22 Gururaja teaches grinding both faces of the slab in order to recess the odd-numbered electrodes on one face and the even numbered electrodes on the second face and filling the recesses with electrically isolating material (Column 7, lines 42-53) and it would have been obvious to do such in the method of Busse et al, as modified above.

Allowable Subject Matter

5. Claims 1-18 are allowed.

6. The following is an examiner's statement of reasons for allowance:

The prior art of record fails to suggest the claimed methods of manufacturing a workpiece, particularly the steps of placing layers of metal on both sides of a plate of ceramic material, cutting the metallized ceramic plate along parallel planes perpendicular to the metal layers to form a multiplicity of bars, stacking the bars with metal layer facing metal layer, with each pair of contacting metal layers forming a respective electrodes; and bonding the stack together.

Gururaja teaches the same intermediate product (See Figure 9E) of alternating perpendicular layers of ceramic plates and joined metal layers but makes such in a different manner by arranging a plurality of metallized ceramic plates adjacent each other and joining adjacent metallized surfaces with a polymer layer. There is no suggestion to modify the method of Gururaja to use the claimed method of having a

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single metallized ceramic plate, cutting it into a plurality of bars and then bonding the bars together.

Busse et al and Oakley et al (U.S. Patent 6,088,894) form transducers assembly by stacking ceramic PZT plates interposed with polymer layers which are then laminated together and diced into individual slabs that are rotated to form transducers having alternating perpendicular ceramic plates and polymer layers (See Busse Figure 1; See Oakley Figure 6). There is no suggestion of forming the slabs using the claimed method of having a single ceramic plate, cutting it into a plurality of bars and then bonding the bars together.

7. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

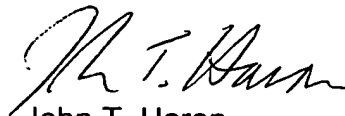
Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **John T. Haran** whose telephone number is **(571) 272-1217**. The examiner can normally be reached on M-Th (8 - 5) and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Blaine Copenheaver can be reached on (571) 272-1156. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read "John T. Haran", is positioned above the printed name.

John T. Haran
Examiner
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